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Mr. Tom Gorin
California Energy Commission, MS – 22
1516 Ninth Street
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Dear Mr. Gorin:

San Diego Gas & Electric Company (SDG&E) is providing the attached comments in response to the California Energy Commission's (CEC) Notice of Committee Workshop on the July 2006 California Heat Storm. We look forward to participating in the Commission's August 29 workshop to address this issue and determine what lessons can be learned to better prepare for the next heat storm in California.

In the attachment, SDG&E has provided responses to many of the questions set forth in the CEC's notice, in preparation for the heat storm workshop. We have provided data to the extent it is available. However, because SDG&E does not have access to all the requested data, such as how other load-serving entities may have performed, we are unable to respond to all of the pre-workshop questions.

As many parties have already noted, the heat storm that occurred in July 2006 did result in high electric loads due to extreme weather conditions. SDG&E is supportive of a thoughtful and structured approach to analyzing all aspects of how the system performed prior to jumping to any particular solution. Any issues identified and potential solutions considered during the course of this inquiry should be assessed as to the overall costs and benefits to consumers.

As an example, the notion of an overall system reserve margin becomes a moot point in the context of local area concerns. In the latter situation, the single largest contingency on the generation side may have a greater impact on reliability. As such, simply increasing reserve margins without addressing the ability of the grid to move that power may not provide the expected benefits. Likewise, transmission improvements that can facilitate the movement of power in normal and extreme weather, as well as under operating contingencies, may provide greater benefits.

Yours sincerely,

Bernie Orozco

SDG&E RESPONSE TO THE CEC PRE-WORKSHOP QUESTIONS ON THE JULY 2006 CALIFORNIA HEAT STORM

Temperature and Other Weather Issues Impacting Load

CEC Questions:

1. How does the July 2006 heat storm sequence compare to previous periods of hot and humid summer weather in California and the West?
2. How important is it to understand weather patterns within different regions in California and the West? Demand and supply patterns within different regions in California and the West? How can this best be accomplished?
3. How should we factor heat and summer humidity effects into future load forecasts?
4. Will forecasting methods or assumptions need to change to accommodate the possibility of more variability in California's future weather?
5. How could electricity load forecasts better accommodate the imprecise nature of weather forecasting?

SDG&E Response:

The weather during the heat storm of July 2006 was an extreme event for SDG&E as it was for the rest of the state, but it was not unprecedented. SDG&E estimates that the combination of high temperatures and humidity place this year's weather at about a 1-in-25 chance of occurrence.

Humidity is an important influence on electric demand, which our forecasting models already incorporate in the form of a heat index, or "feels-like" temperature. During this year's heat spell, humidity was unusually high, accounting for an additional 3 to 4 degrees of apparent temperature compared to normal peak period humidity, which typically adds about 1 additional degree. The combination of high temperatures and high humidity over the July 22 to July 24 time period equates to roughly 4% to 6% of additional load. SGD&E has previously advocated the importance of accounting for the effects of humidity in the CEC's forecasts of SDG&E load.

SDG&E established a record peak demand of 4,502 MW on Saturday, July 22, nearly 11% above the previous annual peak in 2004. After accounting for outages and the fact that the peak occurred on a weekend, this year's peak was reasonably close to expectations, given the weather conditions. SDG&E's forecast already presents various weather scenarios (1-in-2, 1-in-5 and 1-in 10 weather cases) and incorporates the impacts of humidity; as a result, we see no need to modify or adjust our forecasting approach.

It may be reasonable to look at a variety of weather scenarios when determining what criteria should be used for planning purposes. Possible adjustment in assumptions utilized, such as the 90/10 criteria, could be considered; however, that change would have to be balanced with the potential cost increase in designing the distribution system accordingly.

System Reliability during Extreme Weather Events

CEC Questions - Generation / Scheduling:

1. How well did power plants perform when called upon during the heat storm?
2. Did Load Serving Entities (LSE) accurately forecast their customers' loads, and did LSEs and their scheduling coordinators comply with CAISO day-ahead scheduling requirements?
3. What role did imports play in maintaining a reliable supply during the July heat storm? How might this role change in the future?

4. How well did the interruptible and demand response programs perform during the heat storm event?

5. Is California's current 15-17 percent planning reserve adequate for heat storm situations? Should planning reserve margins be set on a month-by-month bias to allow for higher summer temperatures?

SDG&E Response:

Based upon SDG&E data and discussions with the ISO, SDG&E can report the following performance of generation in its service area:

- Both SONGS units were available and fully loaded.
- SDG&E-owned generation facilities were operating or available at full capacity.
- Steam generation in the service area was all available and loaded near the top, except for one unit (approximately 300 MW) that suffered a forced outage.
- The peaking units (units less than 50 MWs) had mixed performance. Some units operated fine, while several units were limited, offline or unavailable.
- One large QF was off-line.
- The one large wind farm in San Diego County was operating and producing power at close to a 60% capacity factor, which was exceptional for wind generation at time of peak.

As far as scheduling power, SDG&E can only comment on its performance relative to serving its bundled load. SDG&E complied with ISO day-ahead requirements regarding the scheduling of resources as compared to its forecasted load. As actual loads increased above forecast, SDG&E adjusted its schedules upward to cover the increase within ISO scheduling limitations. Also during this time, SDG&E was providing additional energy in the supplemental energy market. For SDG&E, imports did not play a significant role. SDG&E only imports about 110 MW from outside California.

At this point in time, SDG&E has no position as to the effect that changes in the reserve margin would have on a similar day. However, SDG&E does believe that a key is having a transmission system with the capability to move both existing and future planned generation to the fixed load locations.

Transmission and Distribution

CEC Questions:

1. What implications does the possibility of longer periods of humid weather in summer have for California's transmission and distribution system? Do we need to think differently about transmission planning?
2. Would equipment capabilities, maintenance, or operations need to change if California's climate becomes warmer?
3. What is the right investment balance between early upgrades and replacement on failure for the distribution system equipment?

SDG&E Response:

SDG&E's transmission system is planned and designed to meet the NERC / WECC and CAISO Planning Reliability Criteria utilizing a 90/10 forecasted load; that is, a one in ten year peak load. Given a set of load forecast scenarios, the existing processes to plan and design the transmission to meet that reliability criteria does not need to be changed. However, one factor that needs to be considered is the lead time associated with transmission upgrades.

Although SDG&E's transmission system was able to be operated reliably during the heat storm, it should be noted SDG&E's transmission system is susceptible to wild fire outages during the heat storm. On July 26, fires burned close to the two main transmission corridors that bring power into San Diego County. If either of those corridors had experienced an outage due to the fires, it would have potentially forced rolling blackouts in order to maintain the integrity of the grid. This concern would be addressed by the construction of the Sunrise Powerlink, which is SDG&E's proposal that a third separate path would be built to accommodate imports into San Diego County.

As far as SDG&E's distribution system, the implication of longer periods of humid weather in summer are that the following considerations may need to be taken into account for impacts on the distribution system: decreased demand response effectiveness; increased air conditioning loads and the effect on peak; reduced diversity of loads; increased load factor and cable mutual heating effect resulting in decreased cable loading capability; increased ambient temperature, decreased equipment (conductors, transformers, fuses) loading capability due to sustained high ambient temperatures.

If California's climate were to become warmer on a sustained basis, the following changes in equipment, maintenance or operations might be considered: real-time ratings on equipment; movement to reliability and condition-based maintenance; real-time system simulation and probabilistic methods; how to mitigate increased pressure on operators; seasonal shift in maintenance work; increased maintenance work during the night. The right investment balance would be determined through expected value calculations.

Customer Response to Extreme Weather

CEC Questions:

1. How likely are customers to suffer "fatigue" in responding to calls for conservation? Is there a predictable time limit beyond which "snapback" occurs and loads rise?
2. How effective were voluntary efforts to reduce demands upon the system during peak periods? How could we better understand the factors that influence customers?
3. What are the economic implications to businesses of interruptible and demand response programs?
4. Do adverse weather shocks influence customers to add equipment such as generators and air conditioning to their homes? Should central air conditioning be considered "saturated" for new California construction in all climate zones?
5. Should more policy attention be paid to landscaping and building orientation, design and materials or other strategies that could reduce the need for cooling equipment even in warmer climates?
6. How might time-of-use pricing or smart meters influence customer choices in the face of warmer or more variable weather?
7. What could we learn about preparing Californians for heat events? How do utilities in other parts of the country with significantly hot and humid weather prepare customers for heat events?

SDG&E Response:

Customer Behavior

Unfortunately, there is insufficient customer load data to answer with precision many of the questions asked above. From an intuitive standpoint, it is reasonable to surmise that fatigue, adverse weather shocks, and frequency of critical peak events will influence customer behavior. For example, as a result of the energy crisis, customers have become painfully aware of supply concerns, price volatility, and the need for conservation during critical peak periods. However, customers also expect a high degree of system reliability, and while they are willing to tolerate near term emergencies, they expect longer term solutions.

Attached herewith is a chart that depicts the average usage per customer on both a recorded and weather-adjusted basis. This chart illustrates that customers were willing to conserve energy during the energy crisis because they

experienced both a supply shortage through CAISO ordered blackouts and a corresponding rapid run-up in prices. However, during the July 2006 heat wave, overall energy usage continued to increase although some levels of temporary load reduction was achieved from customers participating in demand response programs.

Through increased awareness and education over the years on the value of demand response, it has been demonstrated that customers participating in demand response programs respond to critical event signals when they can associate these signals with high demand triggers, such as extreme weather conditions, fires or other system constraints. Because of this, SDG&E believes that demand response events should be triggered based on system need rather than arbitrary triggers that are created to achieve a certain number of annual events.

Additionally, customers receive a financial benefit for participating in demand response programs – either through bill credits or rates that create a price differential between non-event and event periods. As noted below and as demonstrated during the energy crisis, customers who are exposed to cost-based rates are more likely to respond to the energy impacts of extreme temperatures. Such actions will take the form of installing higher efficient equipment and moderating the use of such equipment, which in the long-term will result in more efficient use of the system and subsequently lower overall energy costs.

Technologies

Customers will invest in energy technologies when their benefits (whether this be financial, comfort or some other benefit) outweigh their costs (financial or discomfort). Customers will reap higher benefits when these technologies are utilized throughout the year, not just during critical peak periods. For this reason, SDG&E recommends pursuing energy management technologies that address the entire demand-side management continuum, which includes energy savings (energy efficiency) and capacity savings (peak load management and demand response).

One example is the installation of a higher efficiency air conditioner with a programmable communicating thermostat. In this scenario, the customer will experience permanent energy savings by installing the higher efficient air conditioning unit. Then, during the peak hours of the day, the customer could program the unit to operate at a higher temperature. On critical peak days when supplies are tight and costs are extremely high, a signal can be sent by the utility to temporarily raise the thermostat temperature even higher.

Pricing

All customers should be afforded the opportunity to select a rate design that offers financial benefits for their investment in these technologies. In order to offer load management (TOU) and/or demand response (CPP) rates, the appropriate metering (AMI) must be installed. Without AMI, customers are not exposed to the financial benefits of their investment and subsequently will be unlikely to make the investment in these technologies.

In addition, a significant limitation to setting appropriate price signals for residential customers is AB1x. This legislation shields approximately 60 percent of SDG&E's residential customers from actual prices by mandating a price cap on up to 130% of baseline usage. Because AB1x shields customers from accurate price signals, they lack the motivation to install energy technologies that reduce energy and demand. AB1x will have to be repealed or modified before these customers will participate in energy programs in a meaningful way.

What have we learned? What's ahead? What do we still need to know?

CEC Questions:

1. What priority policy actions, new initiatives, or programs are needed to address the issues raised in these discussions?

2. What needs to be done to increase the coordination between agencies? Would a warmer, more humid or more variable climate require a different mix of agencies and stakeholders to be involved in the state's energy planning process?

3. Given that weather forecasting is imprecise beyond a few days out, in what ways could the State be better prepared to respond to such heat storm events?

SDG&E Response:

In SDG&E's estimation, the July 2006 heat storm was an extreme, although not unprecedented, event in SDG&E's service area. Overall, systems and resources performed well given the extreme temperatures and humidity. SDG&E does not believe that the July 2006 heat storm dictates that immediate, wholesale changes need to be made, but this is a good opportunity to consider possible improvements. For SDG&E, those improvements could be that AB1x is addressed in the near future to ensure that the full benefits of demand response and AMI can be achieved. Lastly, the July 2006 heat storm reinforces the need to add major transmission infrastructure into SDG&E's service area and to look towards replacements of the older generating units over a reasonable time period.